

IN THE CLAIMS:

The text of all pending claims, (including withdrawn claims) is set forth below. Cancelled and not entered claims are indicated with claim number and status only. The claims as listed below show added text with underlining and deleted text with ~~striketrough~~. The status of each claim is indicated with one of (original), (currently amended), (cancelled), (withdrawn), (PREVIOUSLY PRESENTED), (previously presented), or (not entered).

Please CANCEL claims 40, 47, and 48, and AMEND claims 39, 41, 46, 49, 52, 54, and 56-62 in accordance with the following:

39. (CURRENTLY AMENDED) A consumable product unit being removably mounted in an electrophotographic image forming apparatus, comprising:

a consumable product to use in image forming; ~~and~~

a first determination element determining a type of the consumable product; and

a second determination element determining whether the consumable product is a new consumable product;

wherein the first determination element has at least one end that is not commonly connected to the second determination element.

40. (CANCELLED)

41. (CURRENTLY AMENDED) The consumable product unit of claim ~~39~~40, wherein the first determination element is a first resistor having a predetermined first resistance value and the second determination element is a second resistor having a predetermined second resistance value, the predetermined first resistance value being higher than the predetermined second resistance value.

42. (PREVIOUSLY PRESENTED) The consumable product unit of claim 41, wherein the second resistor is a fusible resistor, which melts to disconnect when an over-current is supplied.

43. (PREVIOUSLY PRESENTED) The consumable product unit of claim 41, wherein the predetermined first resistance value varies according to a manufacturer of the consumable product and/or the type of the consumable product.

44. (PREVIOUSLY PRESENTED) The consumable product unit of claim 39, wherein the

consumable product is a cartridge having one or more predetermined color developers.

45. (CURRENTLY AMENDED) The consumable product unit of claim 3940, further comprising:

a first connection terminal connected to a first end of the first determination element and connectable to an external device;

a second connection terminal connected to a first end of the second determination element and connectable to the external device; and

a third connection terminal commonly connected to second ends of the first and second determination elements.

46. (CURRENTLY AMENDED) A consumable product replacement sensing system employed in an electrophotographic image forming apparatus, comprising:

one or more consumable product units removably mountable in a body of the electrophotographic image forming apparatus, to determine a type of a consumable product used in image forming; and

a consumable product replacement sensing apparatus in which the one or more consumable units are mounted, the consumable product replacement sensing apparatus determining the type of the consumable product which is employed in a respective consumable product unit;

wherein each of the consumable product units comprises:

a first determination element determining the type of consumable product,

a second determination element determining whether a respective mounted consumable produce is a new consumable product,

wherein the first determination element has at least one end that is not commonly connected to the second determination element.

47. (CANCELLED)

48. (CANCELLED)

49. (CURRENTLY AMENDED) The consumable product replacement sensing system of claim 4648, wherein the first determination element is a first resistor having a predetermined first resistance value and the second determination element is a second resistor having a

predetermined second resistance value, the predetermined first resistance value being higher than the predetermined second resistance value.

50. (PREVIOUSLY PRESENTED) The consumable product replacement sensing system of claim 49, wherein the second resistor is a fusible resistor which melts to disconnect when an over-current is supplied.

51. (PREVIOUSLY PRESENTED) The consumable product replacement sensing system of claim 49, wherein the predetermined first resistance value varies according to a manufacturer of the consumable product and/or the type of the consumable product.

52. (CURRENTLY AMENDED) The consumable product replacement sensing system of claim 4648, wherein the consumable product replacement sensing apparatus comprises:

a new product determining signal generating unit generating a level of electrical potential corresponding to at least one of the first and the second determination elements;

an engine control unit determining the type of the consumable product by the level of electrical potential corresponding to the first determination element; and

an over-current supplying unit supplying an over-current to disconnect the second determination element.

53. (PREVIOUSLY PRESENTED) The consumable product replacement sensing system of claim 52, wherein the engine control unit determines that the consumable product is the new consumable product if the level of electrical potential generated at the new product determining signal generating unit is a first electrical potential level which corresponds to the first and second determination elements, and determines that the consumable product is an old consumable product if the level of electrical potential generated at the new product determining signal generating unit is a second electrical potential level which corresponds to the first determination element, wherein, if a respective consumable product is determined to be the new consumable product, the engine control unit controls the over-current supplying unit to disconnect the second determination element of a corresponding and new consumable product unit.

54. (CURRENTLY AMENDED) The consumable product replacement sensing system of claim 4648, wherein each of the consumable product units comprises:

a first connection terminal formed at a first end of the first determination element to be connected to an external device;

a second connection terminal formed at a first end of the second determination element to be connected to the external device; and

a third connection terminal commonly connected to second ends of the first and second determination elements.

55. (PREVIOUSLY PRESENTED) The consumable product replacement sensing system of claim 54, wherein the consumable product replacement sensing apparatus comprises:

fourth through sixth connection terminals electrically and respectively connected to the first through third connection terminals;

a new product determining signal generating unit generating a level of electrical potential corresponding to at least one of the first and the second determination elements connected to the consumable product replacement sensing apparatus through the fourth and fifth connection terminals to determine whether the consumable product is the new consumable product;

an engine control unit determining the type of the consumable product by the level of electrical potential corresponding to the first determination element; and

an over-current supplying unit intermitting a current-flow path continuing from the fifth connection terminal through the second determination element to the sixth connection terminal by supplying an over-current to disconnect the first determination element, wherein, if the respective consumable product is determined to be the new consumable product by the level of electrical potential generated at the engine control unit, the engine control unit controls the over-current supplying unit to disconnect the second determination element of a corresponding and new consumable product unit.

56. (CURRENTLY AMENDED) The consumable product replacement sensing system of claim 4648, wherein:

the consumable product comprises a cartridge containing one or more predetermined color developers,

the one or more consumable product units each being provided with a respective one of the consumable products comprises a developing device that develops an image by using one or more color developers supplied from the consumable product, and

the consumable product replacement sensing apparatus is provided in an image forming apparatus that forms the image developed by the developing device on a paper.

57. (CURRENTLY AMENDED) The consumable product replacement sensing system of claim 4648, wherein the first determination element is a first resistor having a first resistance value, wherein the first resistance value of the first resistor varies according to a color of the consumable product provided in the respective consumable product unit.

58. (CURRENTLY AMENDED) A consumable product replacement sensing method for a consumable product replacement sensing system to use in an electrophotographic image forming apparatus, the method comprising:

mounting one or more consumable product units in a consumable product replacement sensing apparatus, each of the consumable product units being formed such that a type thereof is determinable through evaluation of a first determination element by the consumable product replacement sensing apparatus; and

when each of the consumable product units is mounted, determining whether a respective consumable product is a consumable product usable in the consumable product replacement sensing apparatus through evaluation of a second determination element in the respective consumable product unit;

wherein the first determination element has at least one end that is not commonly connected to the second determination element.

59. (CURRENTLY AMENDED) The consumable product replacement sensing method of claim 58, wherein the mounting of the one or more consumable product units comprises determining whether the one or more mounted consumable products are one or more new consumable products, respectively, by:

electrically connecting a respective consumable product unit having the first and second determination elements to the image forming apparatus, the ~~second~~first determination element to determine usability of the consumable product and the ~~first~~second determination element to determine whether the consumable product is a new consumable product;

generating a level of electrical potential corresponding to at least one of the first and second determination elements;

determining whether the consumable product is the new consumable product by the level of electrical potential; and

when the consumable product is determined to be old, determining by the level of electrical potential corresponding to the ~~second~~first determination element whether the

consumable product is usable.

60. (CURRENTLY AMENDED) The consumable product replacement sensing method of claim 59, wherein:

the determining of whether the consumable product is the new consumable product comprises:

determining the consumable product to be new if the level of electrical potential is a first electrical potential level corresponding to the first and second determination elements, and determining the consumable product to be old if the level of electrical potential is a second electrical potential level corresponding to the second~~first~~ determination element,

if the consumable product is determined to be the new consumable product, the determining of whether the consumable product is the new consumable product further comprises:

supplying an over-current to the first~~second~~ determination element to disconnect the first~~second~~ determination element by melting a fusible resistor.

61. (CURRENTLY AMENDED) The consumable product replacement sensing method of claim 59, further comprising:

varying a resistance value of the second~~first~~ determination element according to one or more of a manufacturer of the consumable product, a type of the consumable product and a color of the consumable product provided in the respective consumable product unit.

62. (CURRENTLY AMENDED) A sensing system, comprising:

a consumable unit including a plurality of parallel resistive elements, wherein one of the resistive elements has at least one end that is not commonly connected to the remainder of the resistive elements; and

a sensing apparatus to recognize the consumable unit comprising:

a signal generating portion to generate a signal corresponding to a parallel composite resistance value of the consumable unit connected to the signal generation portion,

a disconnecting portion to selectively and permanently disconnect the~~a~~ respective one of the ~~parallel~~ resistive elements of the consumable unit, and

a controller to control the disconnecting portion to disconnect the ~~respective~~ one of the ~~parallel~~ resistive elements and to compare a level of the signal that is generated from the signal generating portion, after the ~~respective~~ one of the ~~parallel~~ resistive elements is

Serial No. 10/619,214

disconnected, with predetermined standard levels to determine whether the consumable unit is usable in a system and/or to determine a manufacturer of the consumable unit using the sensing apparatus.